

Patent Claims

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1. A configuration for combining flat structural components of relatively low thickness along their narrow circumferential sides, where connecting members that interact on the tongue-and-groove principle are provided at the areas being connected, and the sides of the groove diverge from the groove base and converge at the end away from the groove base at an angle that is greater than the angle of divergence, where the opening width of the groove is greater than the foremost area of the tongue in the direction of insertion, which tongue exhibits wedge-shaped areas that diverge from front to back at the same angle as the sides of the groove, each of which wedge-shaped areas exhibits an undercut in the back area of the tongue that conforms to the groove cross-section, while the undercut's borders, adjoining the wedge-shaped areas, converge at the same angle as the groove sides toward a connecting bridge that is part of the component, wherein an adhesive layer, or a substance which activates an adhesive, is applied to the groove at least in the area of its divergent sides or to the tongue at least in the area of its divergent wedge-shaped area, or to both areas.
2. A configuration according to claim 1, where on at least one side of the groove and at least one side of the tongue, locking elements that conform to each other and ideally extend over the entire length of the groove and the tongue are provided in the form of an indentation or recess, or in the form of a projection, in order to hold connected components in joined position; and where the groove is formed directly in the component itself, or is worked out of the same, in order to provide for the solid connection of the components; the particularly heavy tongue forms a single piece with the component or is worked out of the same; the width of the groove increases from inside outward; the thickness of the tongue decreases in the direction of its unattached end; the projection on the tongue exhibits a shorter back area that with the surface of the components encloses an angle that exceeds the angle [sic]; the recess in the groove exhibits a shorter contact surface that lies at a distance from the groove base and that rests against the shorter, back surface of the projection; at least one, and ideally both, of the two groove sides can flex elastically and outwards relative to the other groove side, so that in locked position the tongue is held by the groove sides with a squeezing action or can be inserted into the groove while the groove sides bend elastically; and the angle between the two triangle sides or between longer front tongue area and the shorter back tongue area is 100° to 140° , particularly 110° to 130° ; where the two legs of the groove are equally long; where

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the recess in the groove exhibits a contact area close to the groove base that in locking position at least partially rests against the longer front surface; where the triangle side close to the groove base, or the section of the tongue area received by the recess, is four to eight times, ideally five to seven times, as long as the triangle side distant from the groove base or the shorter back area; and where the tongue is provided with a layer of adhesive or with an adhesive with an activating substance on at least the contact surface of the groove walls close to the groove base and/or on the longer front area of the tongue.

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B1

3. A configuration according to claim 1 or 2, wherein the grooves of the individual panels, specifically at least one of the lateral groove areas, are provided with a filling, coating, covering, strand, or the like, consisting of a latent adhesive material that becomes active after appropriate activation, and the tongues, specifically at least one of their side areas, is provided with a coating or surface impregnation, a covering, strand, or the like that, if so desired, is applied to the panels and ideally moistens them shortly before they are joined together and consists of an activator which induces adhesion.

4. A configuration according to one of claims 1 to 3, wherein the grooves of the panels, specifically at least one of their lateral areas, is provided with a filling, specifically a coating, consisting of an adhesive or glue that is stabilized by the removal of a solvent or a dispersion agent, ideally water, but that can be reactivated upon contact with a solvent, particularly water or water moisture, and the tongues of the panels, specifically at least one of their lateral areas, are provided with a film or covering that is applied or sprayed on shortly before the panels are joined together and that covers, or at least moistens, said tongues, or with a comparable surface impregnation, consisting of a solvent or dispersing agent, particularly water, which serves as an activator for the adhesive or glue.

5. A configuration according to one of claims 1 to 4, wherein the grooves of the panels, specifically at least one their lateral areas, are provided with a filling, specifically a coating, consisting of a dispersion glue that is stabilized by the removal of water, but that can be reactivated upon contact with a solvent, particularly water or water moisture, and particularly consisting of a fast-binding and mounting glue on a polyvinyl acetate base, for example, Dorus MDO 55 (manufacturer: Henkel) or of another commercially available wood glue, e.g., on a starch and/or protein base.

6. A configuration according to one of claims 1 to 5, wherein the grooves of the panels,

specifically at least one of their lateral areas, are coated with an initial component, specifically with the unhardened or not fully hardened resin component of a two-component polymerization glue, and the tongues, specifically at least one of their lateral areas, are coated with the second component, specifically the hardener component, of said two-component glue, or vice versa.

7. A configuration according to one of claims 1 to 6, wherein the grooves or the tongues of the panels, in particular at least one of their lateral areas, are coated with the second component, specifically the hardener component, applied in the course of manufacturing the panels, of a two-component polymerization glue, ideally in the form of a hardener varnish, and with a first component, specifically the resin component, which is applied to the hardener component, specifically the hardener varnish, preferably shortly or immediately before the panels are laid.
8. A configuration according to claim 6 or 7, wherein the hardener component of the two-component glue, specifically the hardener varnish, has an organic peroxide as its base and resin component to be hardened with said varnish has a methyl acrylate base.
9. configuration according to claim 6 or 7, wherein the hardener component of the two-component glue, specifically the hardener varnish, has an aliphatic or cycloaliphatic polyamine as its base and its resin component is based on an epoxide and/or bisphenol A and/or bisphenol F resin.
10. A configuration according to one of claims 1 to 9, wherein at least one of the lateral areas of the groove belonging to the panels and/or at least one of their tongue lateral areas is, or are, provided with a coating or strand with a micro-encapsulated adhesive that is immediately active.
11. A configuration according to claim 10, wherein the ~~micro-encapsulated adhesive~~ takes the form of a two-component adhesive with a mixture of a micro-encapsulated resin component, (for example, with a methylacrylate base, and a micro-encapsulated hardener component, for example, with a peroxide base.)
12. A configuration according to one of claims 1 to 11, wherein at least one of the lateral groove areas of the panels is ~~provided~~ with a coating or with a strand of the micro-

encapsulated resin component of a two-component adhesive and at least one of the lateral tongue areas that interacts with said coated lateral groove area is provided with a coating, or film or strand, of the also micro-encapsulated hardener component of said two-component adhesive, or vice versa.

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13. A configuration according to one of claims 1 to 12, wherein at least one of the lateral groove areas and/or at least one of the lateral tongue areas is provided with a coating or a film of micro-capsules that are dispersed in a matrix of the hardener component of a two-component adhesive and that contain the resin component of the same adhesive, or of micro-capsules dispersed in a matrix of the resin component and containing the hardener component.
14. A configuration according to one of claims 1 to 13, wherein the grooves of the panels, specifically at least one of their lateral areas, and/or the tongues, specifically at least one of their lateral areas, are covered or coated with a lastingly sticky and permanently active adhesive glue, particularly a molten adhesive glue.
15. A configuration according to claim 14, wherein the grooves of the panels, specifically at least one of their lateral areas, and/or the tongues, specifically at least one of their lateral areas, are coated with a lastingly sticky and permanently active adhesive glue, particularly a molten adhesive glue, that exhibits viscosity values between 15,000 and 1500 centi-poise at temperatures between 140 and 170° C and is applied at temperatures in the indicated range, preferably in the range between 145 and 155° C.
16. A configuration according to claim 14 or 15, wherein the grooves of the panels, specifically at least one of their lateral areas, and/or the tongues, specifically at least one of their lateral areas, are coated with a lastingly sticky and permanently active adhesive glue, particularly a molten adhesive glue, with the commercial designation Dorus PS 534/5 and/or Dorus PS 576/6 (Henkel Company).
17. A configuration according to one of claims 1 to 16, wherein the grooves of the panels, specifically at least one of their border areas, and/or the tongues, specifically at least one of their borders areas, are provided with an integral adhesive strand exhibiting a core strand of a lastingly sticky and permanently active adhesive glue and a polymer cladding strand that surrounds said core strand on all sides, prevents the diffusion of water or any

3
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adhesive solution or dispersion agent, and can be destroyed by the action of pressure and shearing forces exerted when the panels are brought together, where the core strand is formed with an active adhesive or glue with setting properties that is prepared with water and/or a dispersion agent or solvent, particularly wood glue, on a synthetic polymer base, ideally on a polyvinyl acetate base, and/or on a biopolymer base, ideally on a starch and/or protein base.

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18. A configuration according to claim 17, wherein the cladding strand for the adhesive or cement strand is formed with a flexible polymer material that is adhesive relative to the material of the panel, at least upon application of the integral adhesive strand, and that ideally will set rapidly, and preferably with a synthetic rubber, (specifically with butyl rubber,) or with a two-component or moisture-linking polyurethane rubber mass.

19. A configuration according to claim 17 or 18, wherein the grooves, specifically at least one of their lateral areas, and/or the tongues, specifically at least one of their lateral areas, are provided with an integral adhesive strand that exhibits a cross-section with the shape of a flattened dome.

20. A configuration according to one of claims 1 to 19, wherein the coating of the grooves of the panels, specifically of at least one of their lateral areas, with an [adhesive? – noun missing in the German original] that is stabilized by the removal of water but can be (re-)activated upon contact with water or water moisture exhibits a basically uniform layer thickness in the range from 0.1 to 0.4, specifically 0.15 to 0.25 mm, with thickness tolerances in the range of 0.05 mm.

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B2